

A REVISION OF THE NEARCTIC SPECIES OF *ARTHROPEAS*
(DIPTERA: COENOMYIIDAE)

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Abstract.—The genus *Arthropeas* is revised for the Nearctic Region, and its phylogenetic relationships with other genera of lower brachycerous Diptera are discussed.

This study is based on 83 specimens of two species, *Arthropeas americanum* Loew and *A. magnum* Johnson. A third species *A. jonesi* Cresson (1919) (= *arthracina* Brennan, 1935) was transferred to *Bequaertomyia* (Brennan, 1935) and placed in the Pelecorhynchidae (Philip, 1965; Teskey, 1981), although Nagatomi (1975a, 1975c) treated *Bequaertomyia* as a synonym of *Pseudoerinna* (Shiraki, 1932) and felt that *Pseudoerinna* must be relegated to the Rhagionidae.

The genus *Arthropeas* was erected by Loew (1850) for *Arthropeas sibirica*. Two Palearctic species, *A. sachalinensis* (Matsumura, 1916) from Sakhalin and *A. sibiricum* (Loew, 1850; Malloch, 1932; Nagatomi, 1975a, 1975b; Ouchi, 1943) from Siberia, Manchuria, Korea, and Tibet are included in this genus. Leonard (1930) reviewed the Nearctic species.

Arthropeas has been placed in three families of Diptera: (1) Coenomyiidae (Bezzi, 1903; Curran, 1965; Malloch, 1917; Nagatomi, 1975a, 1975b, 1977; Steyskal, 1953), Coenomyiidae: Coenomyiinae (Cole, 1969); (2) Rhagionidae (Aldrich, 1905; Williston, 1888), Rhagionidae: Coenomyiinae (Lindner, 1925), Rhagionidae: Xylophaginae (Leonard, 1930; Williston, 1896, 1908); (3) Xylophagidae (Krivoshchina, 1967), Xylophagidae: Arthroceratinae (James, 1965). Nagatomi (1975a, 1975b) defined the family Coenomyiidae and included the genera *Coenomyia*, *Anacanthaspis*, *Arthropeas*, *Odontosubula*, and *Dialysis*.

In a study of 21 genera, including *Arthropeas*, of lower brachycerous Diptera in the Nearctic Region, Webb (1981) examined 53 morphological characters of adult males and females. Two phylogenetic (cladistic) and three phenetic methods were used in developing and interpreting the relationships of these genera.

Phylogenetic methods.—Cladograms were developed which (1) reflected the least number of convergences for all character states considered and (2) were rooted from a hypothetical ancestor possessing the plesiomorphic state for all 53 characters, using the Wagner algorithm.

Phenetic methods.—Phenetic similarities were analyzed using CLUSTER (written by Dr. R. B. Selander, University of Illinois), and phenograms were produced using UPGMA (unweighted pair-group method using arithmetic averages) for Pearson product-moment correlation coefficients, average taxonomic distances, and mean character differences.

The two phylogenetic analyses associated the genera *Arthropeas*, *Coenomyia*, and *Dialysis*. The three phenetic analyses associated *Coenomyia* and *Dialysis* but separated *Arthropeas* from these genera and associated it with *Arthroceras*. These five analyses showed no association between *Arthropeas*, *Coenomyia*, or *Dialysis* and *Xylophagus* or *Rachicerus*, and reinforce Nagatomi's association and grouping of *Arthropeas*, *Coenomyia*, and *Dialysis* in the Coenomyiidae (Nagatomi, 1975a, 1975b).

Most recently, James (1981) included *Arthropeas* in the Xylophagidae, based on the strong similarity in the larvae of *Coenomyia*, *Rachicerus*, and *Xylophagus*. However, because of the divergence of the adults, he grouped *Arthropeas*, *Coenomyia*, and *Dialysis* in the subfamily Coenomyiinae. On the basis of the larvae Krivosheina (1967) associated *Arthropeas* with *Coenomyia*. A comparison of the larval characters of *Arthropeas* (Krivosheina, 1967), *Dialysis*, and *Coenomyia* has been outlined by Webb and Lisowski (1983). The larvae of *Arthropeas* and *Coenomyia* are similar in their general body shape and appearance, metacephalic rods, and anal plate, and again reinforce Nagatomi's (1975a, 1975b) grouping of this genus into the family Coenomyiidae.

The terminology used here for the adults is from McAlpine (1981) and Stuckenberg (1973).

Arthropeas Loew

Arthropeas Loew, 1850: 304. Type-species: *Arthropeas sibirica* Loew.
Arthropaeas Marschall, 1873: 322.

Description. — Adults large, sluggish. Length of male 8.7–12.9 mm, female 9.2–15.4 mm. Head in lateral view hemispherical. Ocellar tubercle subtriangular, distinctly raised above vertex in male. Vertex rounded, not emarginate lateral to ocellar tubercle. Eyes large, holoptic in male; dichoptic in female, separated by distance equal to outside width of antennal bases; facets equal; glabrous; median margin sinuate, ventral $\frac{3}{4}$ divergent, no emargination dorsolateral to base of scape; in lateral view eyes hemispherical, covering $\frac{3}{4}$ of head. Frons in male reduced, in female broad; median tubercle absent. Antenna with scape globular, bases in male separated by distance less than width of median ocellus, in female separated by distance greater than width of median ocellus, setae elongate, generally extending beyond pedicel, around entire segment; pedicel globular, setae elongate, around entire segment; flagellum subulate, with 8 annuli. Gena broad. Clypeus with anterior surface flat to slightly concave. Face in lateral view rounded, not porrect. Maxillary palp 2-segmented, cylindrical. Labellum membranous.

Thorax with dorsum rounded; vittae distinct; setae black, abundant, with no distinctive pattern; caudolateral tubercles absent. Postmetaspiracular scale and suprametacoxal pit absent. Mesoscutellum with caudal margin rounded, without dorsal tubercles.

Wing length of male 8.4–11.4 mm, female 8.9–12.0 mm, 2.8–3.6× longer than wide. Membrane with veins brown to dark brown; pterostigma generally indistinct; microtrichia cover entire wing; macrosetae on entire length of R_1 ; thyridium absent. Costa circumambient, broader along anterior surface; setae fuscous, short, appressed. Subcosta ends beyond middle of wing. Subcostal cell narrow, elongate, open. R_{2+3} ends distal to fork of R_{4+5} . Marginal cell narrow, elongate, open. Cell R_4 large, enclosing apex of wing. R_4 ends anterior to apex of wing. R_5 ends posterior

to apex of wing. M_1 , M_2 , and M_3 originate separately from apical margin of discal cell. Five posterior cells. Cell M_3 open. Discal cell large, apical margin pointed. Anal cell large, open or closed at wing margin. First basal cell narrow, elongate, apex truncate, extending slightly beyond apex of 2nd basal cell. Anal angle broadly rounded, right-angled. Alula large, broadly rounded.

Tibial spurs 1-2-2. Empodium similar in size and shape to pulvilli. Apical claws on tarsomere 5 fuscous, paired, simple. Hindlegs not raptorial.

Male terminalia with tergite 8 broad, rectangular, about $1.5\times$ longer than wide, posterior margin truncate. Tergite 9 suboval, lateral margins rounded, about $1.5\times$ longer than wide, posterior margin rounded, sinuate. Tergite 10 absent. Cerci 1-segmented, lobate. Ventral plate of proctiger triangular, membranous, lying beneath cerci. Sternites 9 and 10 absent. Basistyle in ventral view broad, lateral margins rounded, fused anteriorly; in dorsal view basistyle with broad arch joining inner margins, aedeagal apodemes narrow, extending slightly beyond base of basistyle. Dististyle broad, thick, apex truncate, reflexed. Aedeagus composed of an aedeagal sheath, endophallus, endophallic hilts, and penis valves. Aedeagal sheath broad, attached basally to inner margins of basistyle, tapered caudally to form endophallic guide. Penis valves thick, sinuate, directed posteriorly. Endophallic tines absent.

Female terminalia with tergite 8 broad, quadrate, $1.2\times$ longer than wide, caudal margin truncate. Tergite 9 reduced, broader posteriorly than at base, as long as wide, posterior margin truncate. Tergite 10 subrectangular, $2.5\times$ wider than long, lightly sclerotized. Cerci large, elongate, 2-segmented; basal segment $2.5\times$ longer than wide, $1.5\times$ longer than apical segment; apical section lobate, without an apical depression. Sternite 8 broad, $1.3-1.4\times$ longer than wide, tapered posteriorly to narrow, median emargination. Sternite 9 greatly modified, invaginated beneath tergite 8 to form internal furca. Sternite 10 broad, subtriangular, tapered posteriorly to rounded, median point. Internal reproductive organs with furca thick, heavily sclerotized, "V" shaped, anterior apodeme absent, posterior enlargement quadrate, not attached laterally to tergite 9. Common spermathecal duct elongate, trifurcating anteriorly to form 3 spermathecal ducts. Each spermathecal duct narrow, membranous, ending anteriorly in oblong spermatheca which lacks internal hairs.

KEY TO NEARCTIC SPECIES OF *ARTHROPEAS*

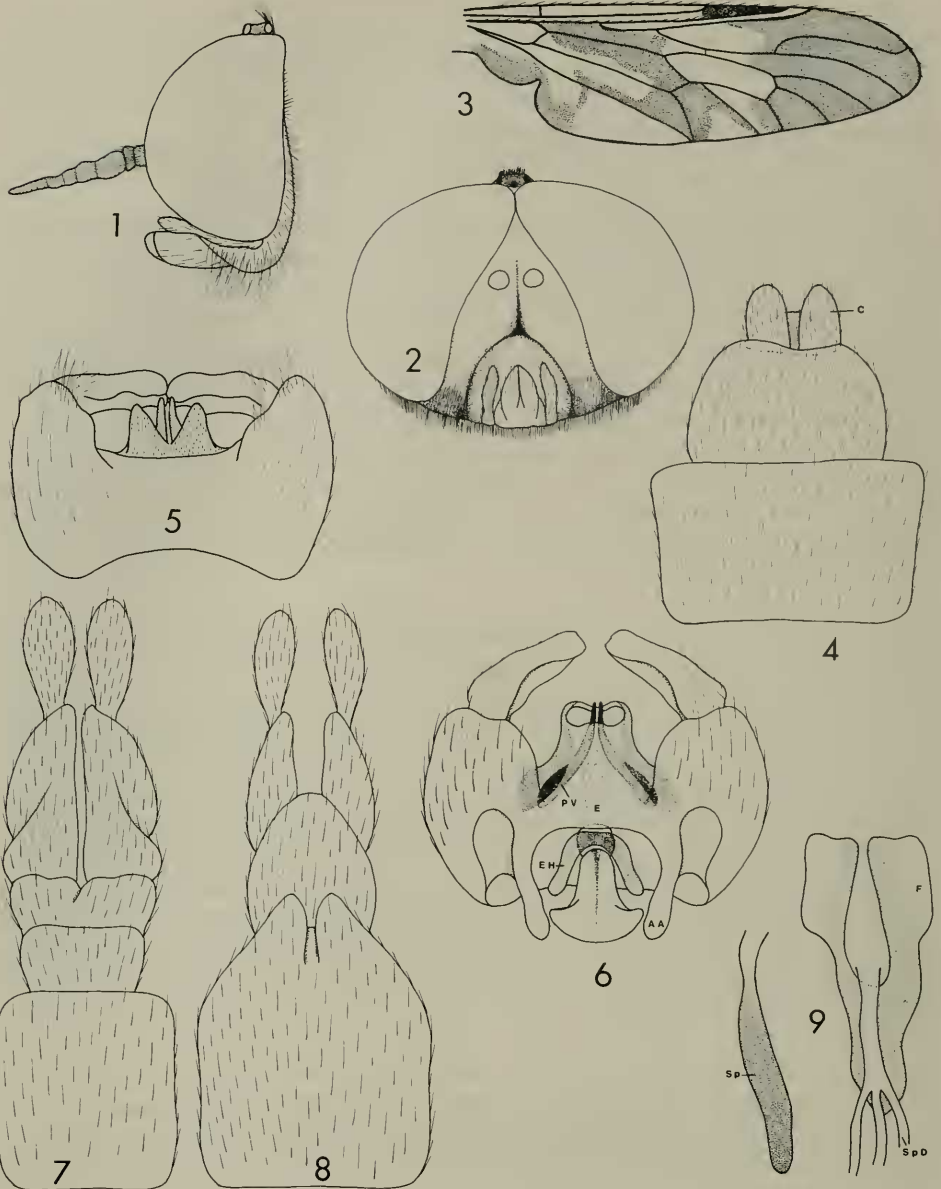
1. Wings with distinct dark brown to black bands (Fig. 3). Abdominal tergites I-IV fuscous with dark yellowish brown fascia along posterior margin *americanum* Loew
- Wings pale brown, slightly darker over pterostigma, discal cell, and posterior $\frac{1}{4}$ of marginal cell (Fig. 11). Abdominal tergites I-IV fuscous, glossy, with 2 pale yellow hemispheres on posterior margin separated medially by fuscous band *magnum* Johnson

Arthropeas americanum Loew

Figs. 1-9, 14

Arthropeas americana Loew, 1861: 316; Leonard, 1930: 17.

Arthropeas americanum resembles *A. magnum* in having the eyes glabrous; antenna subulate with scapal and pedicellar setae around entire segments, flagellum with 8 annuli; anterior surface of clypeus flat to slightly concave, glabrous;



Figs. 1-9. *Arthropeas americanum*. 1, Male head, lateral view. 2, Male head, frontal view. 3, Wing. 4, Male abdomen, posterior segments. 5, Male terminalia, ventral view. 6, Male terminalia, dorsal view. 7, Female terminalia, dorsal view. 8, Female terminalia, ventral view. 9, Female internal reproductive organs. Abbreviations: AA = aedeagal apodeme; C = cerci; E = endophallus; EH = endophallic hilt; F = furca; PV = penis valve; Sp = spermatheca; SpD = spermathecal duct.

maxillary palps 2-segmented, cylindrical; R_1 with macrosetae over entire length; male terminalia lacks endophallic tines; in female, furca lacks anterior apodeme. *Arthropeas americanum* is readily separated from *A. magnum* by the absence of frontal setae in the male; gena fuscous, pollinose; clypeus pollinose; palpal setae

golden; thoracic setae with black spot at base; wing membrane with dark brown to black markings; abdominal tergites I–IV fuscous to black with dark yellow fascia across entire posterior margin; aedeagal apodeme broad, anterior margin expanded laterally; in female, spermathecal duct lacks dark brown enlargement near spermatheca.

Male.—Length 8.7–10.4, 9.9 mm ($N = 5$). Head (Figs. 1, 2) fuscous. Ocelli hyaline to amber; ocellar tubercle fuscous, lightly pruinose; setae fuscous, elongate. Eyes contiguous for short distance ventral to median ocellus. Frons fuscous, pollinose; setae absent. Antenna pale yellow, apical $\frac{1}{2}$ of flagellum fuscous; antenna equal in length to width of head in lateral view; scape 1.1–1.7, $1.4\times$ wider than long, 0.9–1.2, $1.0\times$ length of pedicel, setae pale yellow; pedicel 1.3–1.5, $1.4\times$ wider than long, setae fuscous; flagellum 4.8–5.4, $5.1\times$ longer than wide, 2.9–3.4, $3.1\times$ combined length of scape and pedicel, with ultimate flagellomere about $4.0\times$ length of penultimate flagellomere. Gena fuscous, pollinose; parafacial setae absent; facial setae pale yellow to golden, elongate, abundant. Clypeus pollinose. Maxillary palp pollinose; basal segment 2.5–3.3, $2.9\times$ longer than wide; apical segment 2.6–3.3, $2.9\times$ longer than wide, 1.0–1.1, $1.0\times$ longer than basal segment; setae golden, elongate, abundant. Labellum dark yellow to brown, lightly pollinose; setae dark yellow, elongate, scattered. Postocular setae dark yellow, elongate, abundant, interspersed with short, erect, fuscous setae dorsally.

Thorax fuscous, pruinose; vittae dark brown, broad; setae black, each with small black basal spot. Humeral callus concolor with thorax; setae black, erect, abundant. Pleura fuscous, pruinose; setae stramineous, elongate, abundant over propleuron and on dorsal and posterior $\frac{1}{2}$ of mesoanepisternum, scattered on dorsal $\frac{1}{2}$ of mesokatepisternum and on dorsoposterior corner of meron, absent on mesoanepimeron and metepleuron. Halter dark yellow, setae absent. Mesoscutellum fuscous, lightly pollinose, setae dark brown to fuscous, elongate, abundant. Mesopostnotum fuscous, pruinose, lateral setae dark yellow, elongate. Lateral tergites fuscous, pruinose, setae pale yellow to golden, elongate, abundant.

Wing length 8.4–8.5, 8.5 mm ($N = 5$), 3.1–3.4, $3.3\times$ longer than wide. Membrane (Fig. 3) opaque, with large dark brown to black markings. Fork of R_{4+5} originates above apex of discal cell, angle broadly rounded. R_4 sinuate apically. Anal cell closed at wing margin. Squama opaque, setal margin stramineous, fine, entire.

Legs with coxae fuscous, pruinose, femora and tibiae dark yellow, tarsi fuscous. Forecoxa elongate, mid- and hincoxae short. Hindcoxa with anterior tubercle. Empodium and pulvilli fuscous.

Abdomen fuscous to black, with dark yellowish brown fascia across entire posterior margin; setae fuscous, short, appressed. Tergite 8 (Fig. 4) rectangular, 1.4 – $1.5\times$ wider than long. Tergite 9 suboval, 1.6 – $1.7\times$ wider than long. Cerci lobate. Basistyle in ventral view (Fig. 5), in dorsal view (Fig. 6). Endophallus with endophallic apodeme, expanded laterally, anterior margin broadly rounded, posterior $\frac{1}{2}$ of endophallus narrow, oval, pointed. Endophallic hilt thick, sclerotized, in shape of inverted U, fused medially.

Female.—Length 9.2–14.4, 10.9 mm ($N = 5$). Eyes separated by distance 0.97–1.15, $1.03\times$ outside width of antennal bases. Frons fuscous, pruinose, narrowed apically; setae stramineous, short, erect. Scape with base separated by distance 1.7–2.4, $2.0\times$ width of median ocellus, 1.3–1.4, $1.3\times$ wider than long, 1.0–1.2,

1.1× length of pedicel; pedicel 1.3–1.6, 1.5× wider than long; flagellum 4.5–5.8, 5.3× longer than wide, 2.9–3.3, 3.1× combined length of scape and pedicel. Maxillary palp with basal segment 1.9–3.3, 2.8× longer than wide; apical segment 2.7–3.8, 3.2× longer than wide, 1.1–1.7, 1.2× longer than basal segment.

Humeral callus paler than thorax. Pleura dark yellowish brown, pruinose. Mesoscutellum yellowish brown, glossy. Mesopostnotum yellowish brown to fuscous, lightly pruinose.

Wing length 8.9–12.0, 9.9 mm ($N = 5$), 3.2–3.6, 3.3× longer than wide. Subcosta ends basal to r-m.

Abdomen with tergite 8 (Fig. 7) quadrate, 1.2× longer than wide. Tergite 9 reduced, broader posteriorly than at base, as long as wide. Tergite 10 subrectangular, 2.5× wider than long, lightly sclerotized. Cerci with basal segment 2.5× longer than wide, 1.5× length of apical segment; apical segment lobate. Sternite 8 (Fig. 8) broad, 1.3–1.4× longer than wide, tapered posteriorly to narrow, median emargination. Sternite 10 broad, subtriangular. Internal reproductive organs (Fig. 9) with furca thick, heavily sclerotized, V shaped. Spermathecal ducts lacking dark brown enlargement near spermatheca.

Remarks.—Adults of *Arthropeas americanum* have been collected along dirt roads in wooded areas and on *Aster umbellata*. Adults emerge from the end of June until the beginning of September, with the majority of specimens collected in late July and August. No evidence of protandry was exhibited, and males and females were represented in the collections examined in nearly equal numbers (27 males, 37 females).

Immature stages.—Unknown.

Type-material.—The holotype female of *Arthropeas americanum* (MCZ Type Number 12614) was collected from N. Wis.

Distribution (Fig. 14).—A northeastern species, extending from Virginia to Maine and west to Minnesota.

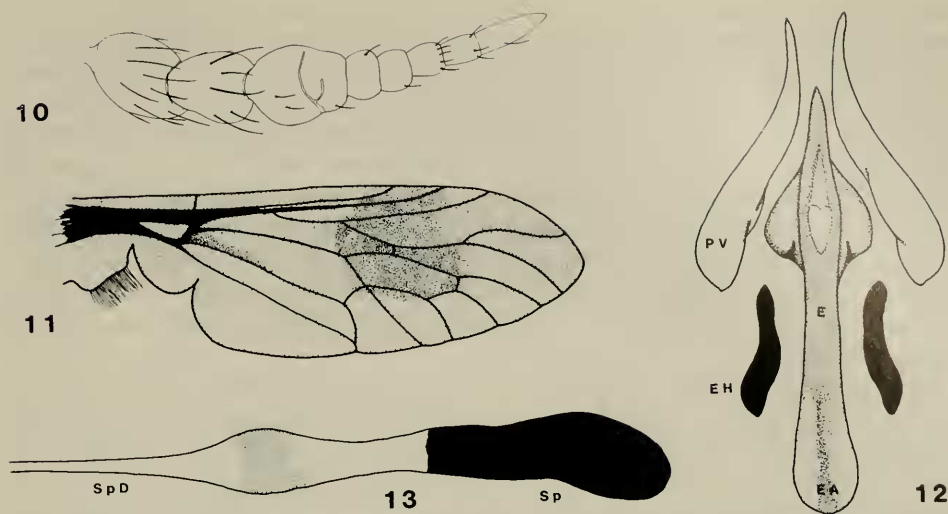
UNITED STATES.—CONNECTICUT: New Haven. MASSACHUSETTS: Cheshire Harbour (near Mt. Greylock). MICHIGAN: Chatham; Oscoda; Sylvania Tract (T49N R38W S8, Gogebic County); Huron Mts (Marquette County); 5 mi E Prudenville; 2 mi E Grayling. MAINE: China. MINNESOTA: St. Anthony Park; Ft. Snelling; Sibeka; Jenkins. PENNSYLVANIA: Black Moshannon S. P.; State College; Tamarack; Scottia Barrens (Centre County); McCraney Run bog, 2 mi SE LeRoy. VIRGINIA: Bald Knob. WISCONSIN: Highway M, 2 mi from Highway 51 (Vilas County); Florence. CANADA.—ONTARIO: Irondale. QUEBEC: Nominigue; Mosham Twp. (Gatineau County); Duncan Lake, near Rupert.

Arthropeas magnum Johnson

Figs. 10–14

Arthropeas magna Johnson, 1913: 11; Leonard, 1930: 19.

Arthropeas magnum is similar to *A. americanum* but can be separated readily from *A. americanum* by the presence of black, lateral frontal setae in males; gena black with dense grey pruinosity; clypeus with dense grey pile; palpal setae black, elongate; thoracic setae stramineous, without basal, black spot; wing membrane pale brown, lacking distinct dark brown markings; abdominal tergites I–IV fuscous, subshiny, with pale yellow hemispheres on posterior margin separated me-



Figs. 10–13. *Arthropeas magnum*. 10, Antenna. 11, Wing. 12, Male aedeagus. 13, Female spermatheca. Abbreviations: E = endophallus; EA = endophallic apodeme; EH = endophallic hilt; PV = penis valve; Sp = spermatheca; SpD = spermathecal duct.

dially by fuscous band; aedeagal apodeme elongate, only slightly expanded anteriorly; female with spermathecal duct bearing dark brown enlargement near spermatheca.

Male.—Length 11.1–12.0, 11.5 mm ($N = 5$). Head fuscous. Ocelli fuscous; ocellar tubercle fuscous, lightly pruinose; setae black, elongate, on posterior margin. Eyes black. Frons covered with dense greyish black pruinosity; setae black, elongate, scattered laterally. Antenna (Fig. 10) pale brown to pale orangish brown; scape 1.0–1.3, $1.2\times$ wider than long, 1.0–1.1, $1.0\times$ length of pedicel, setae black and gold, elongate, subappressed; pedicel 1.1–1.3, $1.2\times$ wider than long, setae same as scapal setae; flagellum 3.1–5.0, $4.3\times$ longer than wide, 1.6–2.8, $2.4\times$ combined length of scape and pedicel, ultimate flagellomere about $2.0\times$ longer than penultimate flagellomere, setae short, fuscous, scattered. Gena broad, covered with dense greyish black pile; parafacial setae fuscous to black, elongate, abundant; facial setae whitish yellow, elongate, abundant. Clypeus fuscous with short, grey pile. Maxillary palp brown, lightly pruinose; basal segment 2.2–2.9, $2.6\times$ longer than wide; apical segment 2.3–3.3, $2.7\times$ longer than wide, 1.0–1.1, $1.1\times$ length of basal segment; setae black, elongate, abundant. Labellum pale yellow to fuscous; setae stramineous, short, scattered. Postocular setae black, elongate, becoming shorter dorsally.

Thorax yellow to gold, pruinose, with 3 broad, black vittae; setae black, elongate, abundant. Humeral callus pale yellow with grey pruinosity; setae stramineous, elongate, abundant. Pleura fuscous, pruinose; setae stramineous to fuscous, elongate, abundant on propleuron, stramineous, elongate, abundant on posterior $\frac{1}{2}$ of mesoanepisternum and over entire mesoanepimeron, black and stramineous, elongate, abundant on mesokatepisternum and metepleuron and on dorsal $\frac{1}{3}$ of meron. Halter stalk dark yellow to brown, capitulum paler, glabrous. Mesoscu-

tellum black, pruinose; setae black, elongate, abundant. Mesopostnotum fuscous, lightly pruinose; setae absent medially, stramineous to fuscous, elongate laterally. Lateral tergite fuscous, pruinose; setae stramineous to fuscous, elongate, abundant.

Wing length 9.2–11.5, 10.6 mm ($N = 5$), 3.0–3.4, 3.2 \times longer than wide. Membrane (Fig. 11) pale brown with brown band over pterostigma, base of marginal cell, discal cell, and apex of 1st basal cell; veins brown; radial sector originates at middle of 1st basal cell. R-m situated at basal $\frac{1}{3}$ of discal cell. Fork of R_{4+5} with angle pointed. Anal cell open slightly at wing margin. Squama stramineous, pruinose, marginal setae stramineous, elongate, entire. M-cu 4–5 \times length of r-m.

Coxae fuscous to black, pruinose; femora fuscous, glossy; tibiae and tarsi pale brown to fuscous. Empodium and pulvilli orangish brown. Hindcoxa without anterior tubercle.

Abdomen with tergites I–IV fuscous to black, glossy, with 2 pale yellow hemispheres on posterior margin separated medially by fuscous band; setae fuscous on fuscous areas, stramineous to golden on pollinose areas. Tergite V with pollinose posterior fascia entire. Tergites VI–VIII pollinose. Terminalia similar to those of *A. americanum* except for endophallus (Fig. 12) with narrow elongate endophallic apodeme not expanded laterally; endophallic hilts sinuate, separated medially.

Female.—Length 12.5–15.4, 13.5 mm ($N = 5$). Ocellar tubercle black with grey pruinosity; setae absent. Eyes separated by distance 1.0–1.2, 1.1 \times outside width of antennal bases. Frons black with grey pruinosity; setae absent. Scape with bases separated by distance 1.4–2.6, 2.0 \times width of median ocellus, 1.0–1.6, 1.3 \times wider than long, 1.0–1.6, 1.3 \times length of pedicel; pedicel 1.4–1.6, 1.5 \times wider than long; flagellum pale brown with apical 2 flagellomeres fuscous, 3.9–5.0, 4.4 \times longer than wide, 2.3–3.3, 2.7 \times combined length of scape and pedicel. Parafacial setae generally absent, occasionally with short, scattered, gold setae; facial setae golden, shorter than in male. Maxillary palp dark orangish brown; basal segment 2.8–3.1, 2.9 \times longer than wide; apical segment 2.2–3.4, 3.0 \times longer than wide, 0.9–1.2, 1.1 \times length of basal segment; setae orangish brown. Labellar setae orangish brown.

Thorax grey to black with short golden pile; setae very short, subappressed; vittae black, pruinose, occasionally indistinct. Humeral callus concolor with thorax; setae golden, short, erect. Halter orangish brown. Mesoscutellar setae shorter than in male. Mesopostnotum with lateral setae black, shorter than in male.

Wing length 9.2–11.5, 10.6 mm ($N = 5$), 3.0–3.4, 3.2 \times longer than wide. Membrane pale brown; veins with brown margins. R_1 ends distal to fork of R_{4+5} , above apex of discal cell. Fork of R_{4+5} originates basal to, above, or distal to apex of discal cell. Squama orangish brown; setae not as abundant as in male.

Coxae orange brown to fuscous. Hindcoxa with anterior tubercle.

Abdomen orange brown, subshiny. Female terminalia and internal reproductive organs similar to those of *A. americanum* except for spermathecal ducts with dark brown enlargement near spermatheca (Fig. 13); spermatheca dark brown, oblong, 3.1 \times longer than wide.

Remarks.—Little is known of the adult habitat although in Oregon a female was collected at a sphagnum bog. Adults have been collected from the middle of June until the middle of August, with the majority of specimens collected during July. No evidence of protandry was exhibited, and males and females were present in the collections examined in nearly equal numbers (11 males, 8 females).

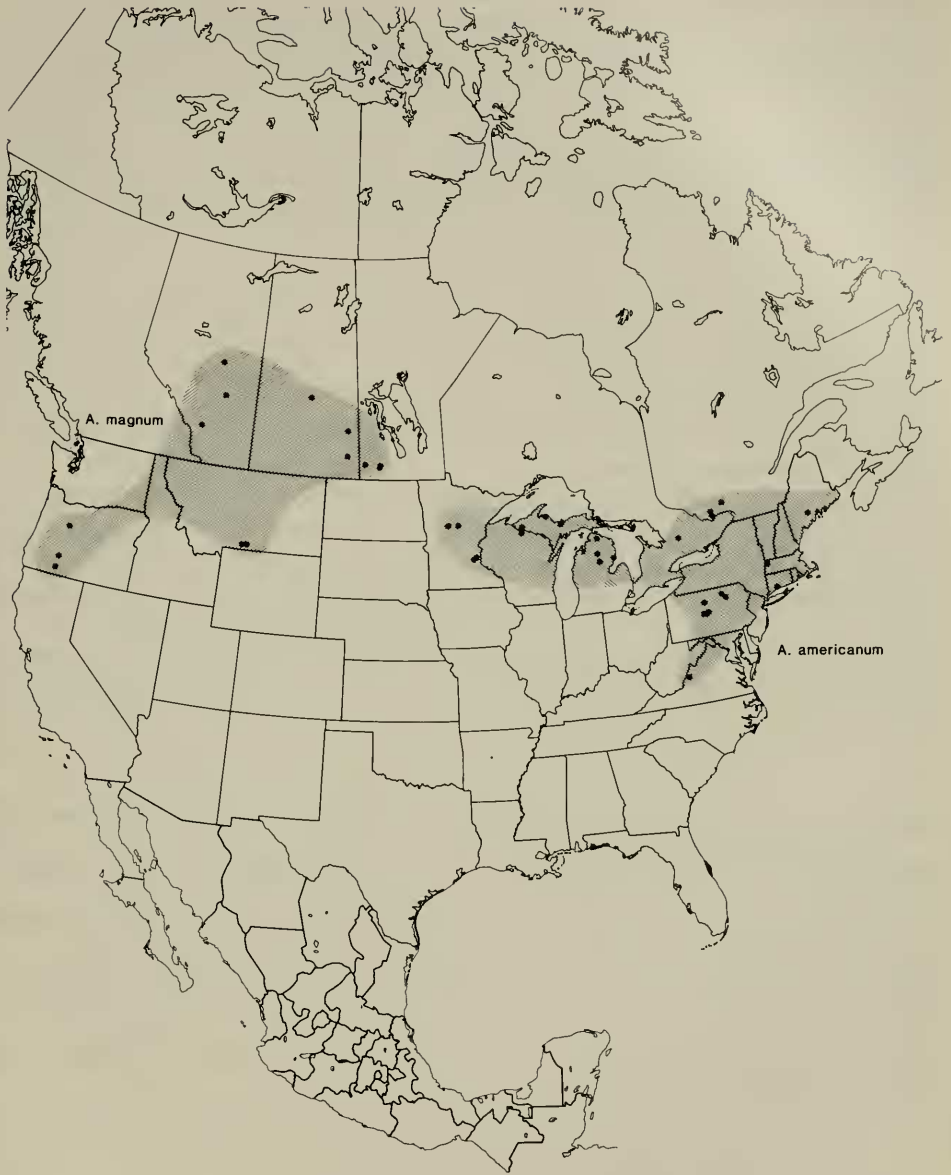


Fig. 14. Distribution of *Arthropeas americanum* and *A. magnum*.

Immature stages.—Unknown.

Type-material.—The holotype male (MCZ) and paratype female (MCZ Type Number 12616) were collected at Beulah, Manitoba.

Distribution (Fig. 14).—*A. magnum* is a northwestern species extending from Manitoba to Oregon. Townsend (1895, *Arthropeas* n. sp.?) reported a female

specimen from Hill City, South Dakota, which Johnson (1913) identified as *Arthropea magnum*, but I have been unable to locate this specimen.

UNITED STATES.—MONTANA: Mystic Lake (Stillwater County); Red Lodge Creek, 3 mi SW Luther. OREGON: Lake of Woods (Klamath County); Big Meadow near Santiam Highway (Linn County near Three Finger Jack Mountain); Crater Lake National Park. CANADA.—ALBERTA: Edmonton; Nevis; Jumping Pond Creek, 20 mi W Calgary. MANITOBA: Aweme; Treesbank; Virden. SASKATCHEWAN: Broadview; Prince Albert; Good Spirit Lake (north of Yorkton).

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